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CHAPTER 10 CONSTRUCTION

10.1 CHAPTER GOALS

In addition to safely constructing a quality project on schedule and within budget, important goals related to building highway corridors on lands managed by FS or BLM include:

- Construction of mitigation measures to fulfill NEPA requirements.
- Implementation of temporary and permanent erosion control measures (see ADOT's *Erosion and Pollution Control Manual*).
- Protection of riparian areas and other significant resources during construction.
- Strict delineation of construction limits in order to protect the adjacent landscape.
- Restoration and stabilization of all slopes and soils disturbed by construction.

10.2 ADOT/BLM/FOREST SERVICE INTERACTION DURING CONSTRUCTION: PARTNERING

As has been discussed throughout this text, highway corridors through lands managed by BLM and FS are to be managed as a joint effort between ADOT and BLM or FS. Because it is a joint effort, open communication between appropriate personnel in each agency is essential. This is especially true during the construction process when issues need to be resolved quickly. In order to foster open communication, ADOT, BLM and FS have agreed to the philosophy of "Partnering". Partnering is defined as the cooperative management of project development activities.

During construction, ADOT, as agent for FHWA, will ensure compliance with all such terms and conditions identified in the NEPA document, the Letter of Consent (LOC) and any special conditions designed to protect BLM or FS lands and resources to which all parties have agreed (see Chapter 2).

During construction, BLM or FS will typically:

- Monitor the progress of the contract.
- Assist the ADOT Resident Engineer (RE) in addressing or clarifying the intent of provisions or measures that involve BLM/FS land and resources.
- Provide input on construction issues during the weekly construction meetings.
- Review construction for compliance with the Stormwater Pollution Prevention Plan (SWPPP).
- Assist coordination with other involved agencies, such as the State Game and Fish Department, US Fish and Wildlife Service, etc.

In addition to inter-agency cooperation, it is important that during construction the contractor receives clear instructions and responses to queries in a timely fashion; a clear chain of command is required. To meet that need, shortly after award of the contract and prior to the onset of construction activities, ADOT requires the contractor to host a "Partnering" meeting. BLM/FS will be given an opportunity to provide input on construction issues during the construction partnering meeting. The goals of this meeting include:

- Establish contacts and define the roles of key agency representatives.
- Establish common project objectives and guidelines.
- Establish an issue/problem resolution process.
- Establish a joint evaluation process.

If BLM/FS identifies a situation where it appears there may be non-compliance with NEPA, the LOC or the project contract documents, BLM/FS will work directly with the ADOT Project Manager or Resident Engineer to resolve the issue. BLM/FS will not initiate direct contact with any contractor working for ADOT. Exceptions include BLM/FS law enforcement authority and responsibility for fire control. In emergency situations such as incidents relating to fire, safety, or the irretrievable loss of resources, BLM/FS has the authority to deal directly with the involved party, including the contractor.

10.3 CHANGES AND MODIFICATIONS TO PROJECT CONTRACT DOCUMENTS

When changes to the project contract documents are required, environmental impacts will be evaluated in addition to construction costs prior to permitting the contractor to proceed. Mitigation measures described as part of the NEPA process are not subject to value engineering.

10.4 TEMPORARY ACCESS

Temporary construction access needs are typically identified during the planning and design process in order to address necessary environmental clearances and should be described in the project contract documents. However, contractors may request additional (unplanned) temporary access to fences, bridge sites, cut and fill slopes, staging areas, hot plant sites, crushing sites, decking (timber staging) areas or detours. Additional environmental documentation may be required in these cases and contractors should be notified in the project contract documents of the time required for such documentation. Contractors should identify areas not included in the approved Environmental Document as soon as possible in the construction process. BLM/FS will assist in determining the appropriate environmental analysis for any proposed changes. The Partnering session offers an opportunity to agree to such a process.

Figure 10.1 Erosion control includes sediment basins to catch flows over disturbed soils.

Where crossing natural drainages, temporary construction approaches should be narrow and as perpendicular as possible to the streambed and disturbance to the stream bank minimized. Approaches should be treated to minimize erosion into the drainage. See Chapters 5 and 6 for more information.

10.5 EROSION AND POLLUTION CONTROL

SWPPP and NOI

After award of the project and prior to the start of construction, the contractor must submit his own Stormwater Pollution Prevention Plan (SWPPP) to ADOT (see Chapter 8). These plans shall also be reviewed by BLM/FS. ADOT and BLM/FS personnel should review the contractor's SWPPP in particular regard to the following concerns:

- During construction, areas of disturbed soil that are not protected by permanent erosion control measures (seeding, impervious surfaces, etc.) should be kept to a minimum as described in the project contract documents.
- Stormwater flows must be guided through or diverted around construction sites. Flows over disturbed soils should be detained in sediment basins, Figure 10.1.
- Diversion structures should be made of non-erodible material, such as concrete, plastic or rock.
- Diversion structures should be in place prior to commencement of soil disturbing activities.
- All stream diversions must comply with State and Federal water quality standards as they are implemented.

All disturbed areas must be addressed by the SWPPP and the Best Management Practices (BMP's) must be applied and installations maintained in good working order (refer to ADOT's *Erosion and Pollution Control Manual* for more information).

After concurrence of the SWPPP by BLM/FS and approval by the RE and prior to any earth-disturbing activities, the contractor must submit an application for a Notice of Intent (NOI) to the Arizona Department of Environmental Quality (ADEQ).

Equipment Washing

To minimize the introduction and spread of invasive and noxious weeds, all equipment that will operate on the project must be washed prior to operating within BLM or FS lands. Refer to ADOT's *Erosion and Pollution Control Manual* for proper washing techniques.

Spill Prevention Containment and Countermeasures

As described in greater detail in ADOT's *Erosion and Pollution Control Manual,* the contractor's SWPPP should address pollutants such as fuels, lubricants, bitumens, raw sewage, wash water from

Figure 10.2 Hydroseeding is a way in which soils can be stabilized after construction activities.

concrete or aggregate operations and other harmful materials.

Seeding

In order to meet ADEQ requirements, soils disturbed by construction activities must be stabilized. Stabilization is typically achieved by means of seeding, Figure 10.2, in order to re-establish native vegetation. The success of revegetation on construction projects relies heavily on inspection and attention paid to complying with the project contract documents.

As discussed in greater detail in Chapters 4 and 7, seeding success is dependent upon proper soil conditions. Field personnel should review the project contract documents as they relate to slope preparation.

Contractors may request substituting seed species for those listed in the project contract documents. Readily available commercial seed and plant species that the contractor may suggest may not be appropriate for substitution for projects on BLM/FS lands. Prior to considering proposed seed species substitutions by the contractor, the RE should consult ADOT Roadside Division as well as BLM/FS.

Seed, tackifier, compost, fertilizers and soil amendments must be delivered to the construction site in compliance with the project contract documents. For large projects, multiple applications may be necessary, requiring multiple contractor mobilizations. See Chapter 7 for more information.

NOT Requirements

As described in greater detail in the *ADOT Erosion and Pollution Control Manual*, ADOT and the contractor must comply with the ADEQ/EPA Statewide Construction General Permit regarding stormwater permits and provide to ADEQ or EPA a Notice of Termination (NOT) at the conclusion of construction. For most ADOT projects on BLM and FS lands, successful revegetation is an essential component of final stabilization. The ADOT methodology for determining final stabilization may be found at the ADOT Stormwater Program website listed at the conclusion of this chapter.

10.6 FIRE CONTROL

The FS typically provides fire information in the project contract documents and needs to provide information and monitoring of the Fire Control Plan throughout the construction project.

10.7 CLEARING LIMITS AND VEGETATION PROTECTION DURING CONSTRUCTION

Clearing and Grubbing
Staking of clearing limits, including top of cut, toe of fill, warping, laying back cut slopes, rounding, access areas, staging areas and all other limits of construction, Figure 10.3, is required prior to clearing. As described in the project contract documents, the clearing limit stakes should be checked by both ADOT and BLM/FS prior to clearing.

If work is needed beyond the clearing limits, separate environmental documentation and authorization may be required.

For projects with large rights-of-way, areas to be left undisturbed should be described in the project contract documents and clearly identified in the field. Fencing, Figure 10.4, or concrete barriers, may be required.

Early installation of the easement fence may be desirable to protect the site from off-road vehicles or animals, and to limit contractor operations.

Merchantable Timber

As described in Chapter 2, FS must appraise and sell timber to ADOT where warranted by the project location. ADOT typically enters into a separate contract for the removal of the timber. Up to six months may be required in order to inventory the timber and complete the transfer to ADOT.

If during construction, design changes require the removal of additional trees, these trees must not be cut until they are measured, marked and sold to ADOT. Failure to observe this procedure could result in penalties.

10.8 WATER

Riparian Awareness
As described in the project contract documents, construction personnel should be properly trained in the identification, importance and protection of riparian areas and values.

Water Source Development
Water source development is sometimes needed to supply water for road construction and dust control. Separate BLM/FS or other agency approval may be required to pump water from an existing stream or pond, depending on water rights and use. If required, this approval should be secured during the planning and design process as discussed in Chapter 2. If the contractor chooses to pursue an independent source of water, he should be reminded that doing so may require addressing NEPA obligations (see Chapter 2), which can take considerable time to complete.

Where cofferdams or water holes are constructed

Figure 10.3 Staking of clearing limits is required proir to clearing.

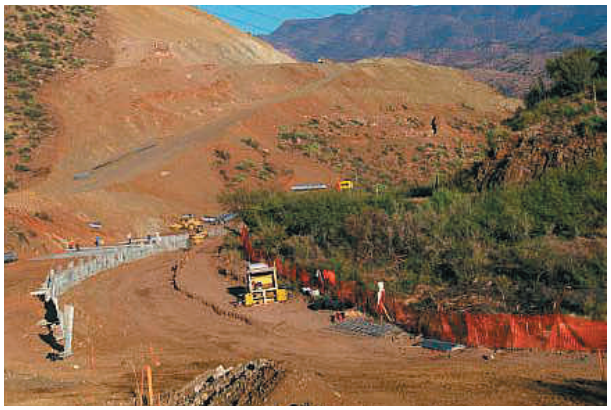

Figure 10.4 Fencing may be required for areas which need to be left undisturbed.

Figure 10.5 Types of archeological resources include sites such as Wupatki Pueblo, Arizona.

in natural streams, they should be constructed from sandbags filled with clean sand or from other inert materials. They should not be constructed of soil, which can erode into the stream. Weirs should be constructed to address overflows, which should be directed back into the stream following removal of suspended sediment. At no time should downstream water flow be reduced to a level that may be detrimental to aquatic resources, fish passage, or other established uses.

10.9 ARCHEOLOGICAL/CULTURAL AWARENESS

If any archeological, Figure 10.5, or cultural resources are discovered during construction, the RE should stop work in that area immediately and report findings to the ADOT archeologist for evaluation. The BLM/FS must also be notified immediately of such findings.

10.10 TRAFFIC CONTROL DURING CONSTRUCTION

Projects on BLM/FS land will generally require weekend and holiday shutdowns, which will require strict enforcement by the RE. These issues should be clearly identified in contract documents.

10.11 ACCEPTANCE OF WORK

Phased Acceptance of Work
The RE may request the BLM/FS to review work in progress for input on interim work (phased acceptance) prior to payments. Phased acceptance by ADOT may be considered to be final acceptance **only** for that portion of the work completed.

Final Project Acceptance
ADOT, BLM/FS and the contractor should conduct a final project walk-through and project inspection prior to final acceptance of the project. This will afford all project owners/stakeholders an opportunity to review the project and ensure compliance with the intent of the project contract documents. A final punch list should be developed at this time in order to reach agreement and resolve any remaining construction issues.

10.12 ADDITIONAL INFORMATION

ADOT Construction Manual:
http://www.azdot.gov/Highways/constgrp/const_manual/index.asp

ADOT Stormwater Program:
http://azdot.gov/adot_and/storm_water/stormwater.asp

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